

Appln. No. 10/632,352

Attorney Docket No. DKT91043H

**II. Listing of Claims**

Please cancel claims 82 through 107 inclusive.

82-107. Cancelled.

108. (New) An adaptive drive system for a motor vehicle comprising, in combination,

a first drive line having a first drive shaft, a first differential, a first pair of axles, a first pair of wheels and at least one first speed sensor for providing a first drive line speed signal,

a second drive line having a second drive shaft, a second differential, a second pair of axles, a second pair of wheels and at least one second speed sensor for providing a second drive line speed signal,

a transfer case having an input, a first output adapted to drive said first drive line, a second output adapted to drive said second drive line and a clutch that is capable of being variably engaged and is operably disposed between said first output and said second output, wherein said clutch is capable of engagement levels between a predetermined minimum engagement and a predetermined maximum engagement, and

a microcontroller that receives said first driveline speed signal from said first speed sensor and said second driveline speed signal from said second speed sensor and determines a speed difference between said first and said second speed signals at predetermined times,

wherein said clutch engagement increases if said speed difference is greater than a first predetermined value and said clutch engagement is less than the

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predetermined maximum engagement level at said predetermined times, and said clutch engagement decreases if said speed difference is less than a second predetermined value and said clutch engagement is greater than said predetermined minimum engagement level at said predetermined times.

109. (New) The adaptive drive system of claim 108 wherein said first predetermined value is greater than said second predetermined value.

110. (New) The adaptive drive system of claim 108 wherein said first predetermined value is less than said second predetermined value.

111. (New) The adaptive drive system of claim 108 wherein said predetermined values are equal in magnitude.

112. (New) The adaptive drive system of claim 108 wherein said predetermined times are equal in duration.

113. (New) The adaptive drive system of claim 108 wherein said decreased engagement of said clutch is by predetermined amounts when said speed signal difference is less than said second predetermined value at said predetermined times.

114. (New) The adaptive drive system of claim 108 further including a throttle position sensor providing a signal to said microcontroller and wherein said first predetermined value reduces in magnitude as said signal from said throttle position sensor increases.

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115. (New) The adaptive drive system of claim 108 wherein said speed signals represent an average speed of an associated said pair of wheels.

116. (New) The adaptive drive system of claim 108 wherein said clutch is engaged at at least a minimum level of engagement at said predetermined times.

117. (New) The adaptive drive system of claim 115 wherein said microcontroller reduces said predetermined values as said predetermined minimum clutch engagement is increased.

118. (New) The adaptive drive system of claim 108 wherein said clutch is a friction clutch pack having a plurality of interleaved discs.

119. (New) The adaptive drive system of claim 108 wherein said clutch includes a ball ramp actuator having an electromagnetic coil.

120. (New) An adaptive drive system for a motor vehicle comprising, in combination,

a first drive line having a first differential, a first pair of axles, a first pair of wheels and at least one first drive line speed sensor,

a second drive line having a second differential, a second pair of axles and a second pair of wheels and at least one second drive line speed sensor,

a clutch operably disposed between said first drive line and said second drive line, and

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a microcontroller that compares speed data from said first and said second drive line speed sensors during predetermined time intervals and wherein engagement of said clutch increases if a difference between speeds of said drivelines is greater than a first predetermined value during said predetermined time intervals, and engagement of said clutch decreases if a difference between speeds of said drivelines is less than a second predetermined value during said predetermined time intervals.

121. (New) The adaptive drive system of claim 120 wherein said increased engagement of said clutch occurs in steps when said speed difference exceeds said first predetermined value during said predetermined time intervals.

122. (New) The adaptive drive system of claim 120 wherein said decreased engagement of said clutch occurs in steps when said speed difference does not exceed said second predetermined value during said predetermined time intervals.

123. (New) The adaptive drive system of claim 121 or 122 wherein said steps are of equal magnitude.

124. (New) The adaptive drive system of claim 121 or 122 wherein said steps are of equal duration.

125. (New) The adaptive drive system of claim 120 wherein said clutch is engaged at at least a minimum level of engagement during said predetermined times intervals.

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126. (New) The adaptive drive system of claim 121 or 122 wherein said clutch is provided with at least a minimum level of engagement during said predetermined times intervals and the magnitude of said steps decreases as said minimum level of engagement of said clutch increases.

127. (New) The adaptive drive system of claim 125 wherein said microcontroller determines said minimum level of clutch engagement in response to a signal from a throttle position sensor.

128. (New) The adaptive drive system of claim 121 or 122 wherein a greater number of said steps corresponds to smaller magnitudes of said steps.

129. (New) The adaptive drive system of claim 121 or 122 wherein the magnitude of said steps are a function of one of throttle position and brake system activation.

130. (New) The adaptive drive system of claim 120 wherein said clutch is a friction clutch pack having a plurality of interleaved discs.

131. (New) The adaptive drive system of claim 120 wherein said clutch includes a ball ramp actuator having an electromagnetic coil.

132. (New) An adaptive drive system for a motor vehicle comprising, in combination,

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a first drive line having a first drive shaft, a first differential, a first pair of axles, a first pair of wheels and at least one first speed sensor for providing a first drive line speed signal,

a second drive line having a second drive shaft, a second differential, a second pair of axles, a second pair of wheels and at least one second speed sensor for providing a second drive line speed signal,

a transfer case having an input, a first output adapted to drive said first drive line, a second output adapted to drive said second drive line and a clutch that is capable of being variably engaged and is operably disposed between said first output and said second output, and

a microcontroller that receives said first driveline speed signal from said first speed sensor and said second driveline speed signal from said second speed sensor and then determines a speed difference between said first and said second speed signals at predetermined times,

and wherein said clutch engagement increases if said speed difference is greater than a first predetermined value at said predetermined times and said clutch engagement decreases if said speed difference is less than a second predetermined value at said predetermined times.

133. (New) An adaptive drive system for a motor vehicle of claim 132 wherein said clutch is a friction clutch pack having a plurality of interleaved discs.

134. (New) An adaptive drive system for a motor vehicle of claim 132 wherein said clutch includes a ball ramp actuator having an electromagnetic coil.

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135. (New) An adaptive drive system for a motor vehicle of claim 132 wherein said clutch is engaged at at least a minimum level of engagement during said predetermined times intervals.

136. (New) An adaptive drive system for a motor vehicle of claim 135 wherein said microcontroller determines said minimum level of clutch engagement in response to a signal from a throttle position sensor.

137. (New) An adaptive drive system for a motor vehicle of claim 132 wherein said increased engagement of said clutch occurs in steps when said speed difference exceeds said first predetermined value during said predetermined time intervals.

138. (New) An adaptive drive system for a motor vehicle of claim 132 wherein said decreased engagement of said clutch occurs in steps when said speed difference does not exceed said second predetermined value during said predetermined time intervals.

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